

REMARKS

Claims 1 to 44 are pending. Claims 5, 15 to 18 and 24 to 27 are cancelled. Claims 43 and 44 are new.

No claims are allowed.

1. The drawings are objected to under 37 CFR 1.84(p)(5) because they don't include certain reference signs mentioned in the description. Applicant has amended the drawing Fig. 1d to include numerical references 35 and 37. A marked up copy of the drawing figure as well as a Replacement Sheet are attached.

2. Claims 1 and 38 are objected to because of various informalities. The Applicant has amended the claims to clear up the informalities noted by the Examiner.

3. The Examiner provisionally rejects claim 1, 32 and 33 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 7, 14 and 15 of copending Application Serial No. 10/809,034. Applicant thanks the Examiner for holding the requirement for a terminal disclaimer in abeyance until patentable subject matter is found in the co-pending application.

4. Claims 1 to 4, 6 to 14 and 16 to 42 are rejected under 35 U.S.C. 112, second paragraph. The indefinite language noted in the claims has been amended.

Regarding the phrase "necked down portion" found in claims 1, 32 and 34 to 37, that phrase has been amended to provide the complex aperture having an "hourglass shape in plan view". Support for this characterization is found in numerous drawings in the application. A good example is Figs. 1b and 1d. It is clear that the centers of the multiple sets 20 of overlapping

holes 22 are closer than the radius of each hole. Further, the perimeter of the complex aperture has a portion that extends inwardly from opposite sides of the slot. The close spacing between immediately adjacent apertures means that only one screw can be received in one hole or the other of the complex aperture at a time. The screw contacts threads around a perimeter that is somewhat greater than 180 degrees, but less than 360 degree. The two structures combine to provide the complex aperture with its hourglass shape in plan view that eliminates wander of the screw in the aperture.

Reconsideration of this rejection is requested.

5. Claims 1 to 3, 6 to 8, 10 to 13, 15, 19 to 22, 24 to 26, 28 to 30, 32 and 34 to 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (U.S. Patent No. 6,406,478) in view of Weaver et al. (U.S. Patent No. 6,623,486).

Kuo describes bone reinforcement plates having through holes 21 and slots 22. Both the through holes and slots compromise an upper portion having a frusto-conical shape and a lower portion having a cylindrical shape. This is best shown in Figs. 3 and 6 where screws 30 are received in a hole 21 and a slot 22. The screw has a frusto-conical head portion extending from a threaded shaft. The frusto-conical head matches the shape of the upper portions of the hole and slot. This provides a wide area contact of the screw head with the hole 21 and with the slot 22, respectively.

Figs. 3 and 6 further show that the threaded shaft has a diameter less than that of the cylindrically-shaped lower portions of the hole 21 and the slot 22. That precludes the threaded shaft of the screw 30 from engaging with the lower portions of either the hole or the slot. Furthermore, the lower portions of the hole and slot aren't threaded. So, even if Kuo

had provided the lower portions of the hole and slot with a diameter substantially similar to that of the threaded screw shaft, the screw wouldn't "lock" with the bone plate, as called out in amended independent claim 1. Independent claims 34 to 36 have been amended in a similar manner.

Weaver et al. teaches a bone plate system comprising a bone plate 32 provided with a first plate hole 36 having threads 40 and a second plate hole 36 devoid of threads. In that respect, the combined teachings of Weaver et al. and Kuo would not have lead one skilled in the art to the presently claimed invention. If one were to provide the threads 40 of Weaver et al.'s hole 36 to the lower portion of either the hole 21 or slot 22 of Kuo, the result would be a threaded lower portion to Kuo's hole and slot that wouldn't contact the screw threads. The examiner can't make the assumption that not only would one skilled in the art have known to thread the lower portion of Kuo's hole and slot, but would further have known to then make such a threaded plate structure of a diameter matching that of the threaded screw shaft. To hold otherwise is to impart more to the references than what they fairly teach.

In other words, to hold that Kuo in view of Weaver et al. renders amended independent claim 1 unpatentable is to credit the skilled artisan with being able to make a two-step improvement on the prior art. The first step is to combine Weaver et al.'s threads with the unthreaded lower portions of Kuo's hole and slot. The second step is to then credit the skilled artisan with having the further insight to close the gap between the thusly threaded lower portions of Kuo's hole and slot so that they contact the screw shaft. In the applicant's opinion, that's giving the skilled artisan more than he deserves and certainly more than the prior art teaches.

In fact, it is the applicant's position that Kuo purposely made the lower portions of the hole 21 and slot 22 diametrically wider than that of the screw shaft so that the shaft wouldn't contact or catch on the lower portions. In Kuo's locking plate system, there was no need for contact between the screw and plate there. The contact that is needed already occurs at the upper frusto-conical portions of the hole 21 and slot 22. As discussed at column 2, lines 42A, the intent of the threaded shaft of screw 30 is to be "screwed into the bone tissue to hold the spine in position". That's in direct contradiction to a reading of the combined references having the lower portions of Kuo's hole 21 and slot 22 in his bone plate being threaded for locking engagement with a screw instead of the screw being free to lock into the spine.

Accordingly, amended independent claims 1 and 34 to 36 are allowable over the cited combination of Kuo in view of Weaver et al. Claims 2, 3, 6 to 8, 10 to 13, 19 to 22, 28 to 30 and 32 are patentable as hinging from allowable base claims. Claims 15 and 24 to 26 have been cancelled, thereby rendering this rejection moot with respect to them.

Reconsideration of this rejection is requested.

6. Claims 4, 9, 14, 18, 23, 27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Weaver et al. as applied to claims 1, 6, 11, 19, 24 or 28 above, and further in view of Orbay (U.S. Patent No. 6,358,250). Orbay teaches a bone plate with holes that define axes which are oblique relative to each other. Nonetheless, claims 4, 9, 14, 23 and 31 each depend from amended independent claim 1. As discussed in section 5 above, amended independent claim 1 is allowable over the combination of Kuo in view of Weaver et al. The inclusion of Orbay does not adversely affect that

allowability. Accordingly, these claims are patentable as hinging from an allowable base claim. Claims 18 and 27 are cancelled, thereby rendering this rejection moot with respect to them.

Reconsideration of this rejection is requested.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Weaver et al. as applied to claim 32 above, and further in view of Cesarone (U.S. Patent No. 5,851,207). Cesarone relates to a separable surgical drill guide and plate. Nonetheless, claim 33 depends from amended independent claim 32 which, as discussed in section 5 above, is allowable over the combination of Kuo in view of Weaver et al. Accordingly, claim 32 is patentable as hinging from an allowable base claim.

Reconsideration of this rejection is requested.

8. Claims 37 to 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Weaver et al. and Tepic et al. (U.S. Patent No. 5,733,287). Tepic et al. teaches a bone plate with recesses 13 located on the bottom side to reduce peak stresses. In any event, independent claim 37 has been amended into a form that is allowable over the combination of Kuo in view of Weaver et al. This has previously been discussed in section 5 above. The addition of Tepic et al.'s teachings do not adversely affect that allowability. Accordingly, claims 38 to 41 are patentable as hinging from an allowable base claim.


Reconsideration of this rejection is requested.

9. Claims 37, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Weaver et al and Klaue et al. (U.S. Patent No. 5,002,544). Klaue et al. teaches a bone plate with recesses 10 located on the bottom side. In any event, independent claim 37 has been amended into an allowable form and the addition of Klaue et al.'s does not adversely affect that. Accordingly, claims 38 to 41 are patentable as hinging from an allowable base claim.

Reconsideration of this rejection is requested.

It is believed that claims 1 to 4, 6 to 14, 19 to 23 and 28 to 44 are now in condition for allowance. Notice of Allowance is requested.

Respectfully submitted,


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MARKED UP
REPLACEMENT SHEET

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